261-6

Physics in Technology

Volume 15 1984 Pages 1–340

Published by The Institute of Physics London and Bristol Copyright \bigcirc 1984 by The Institute of Physics and individual contributors. All rights reserved.

Multiple copying of the contents or parts thereof without permission is in breach of copyright. Permission is usually given upon written application to the Institute to copy illustrations and short extracts from the text of individual contributions provided that the source (and, where appropriate, the copyright) is acknowledged. Authorisation to photocopy items for internal or personal use, or the internal or personal use of specific clients, is granted by The Institute of Physics for libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that the base fee of \$2.2 per copy is paid directly to CCC, 21 Congress Street, Salem, MA 01970.

Published by The Institute of Physics 47 Belgrave Square, London SW1X 8QX

Physics in Technology

Chairman and Honorary Editor A Reddish B Sc F Inst P

Deputy EditorR F Coe M Sc M Inst P

Editorial Board

A G Atkins B Sc M A Ph D CEng M I Mech E
MIM A CInst Arb
M G Clark M A Ph D FRSC C Chem F Inst P
P Gummett B Sc M Sc Ph D
G J van Gurp Ph D
R S Nelson B Sc D Sc
J G Scane F Inst P
D Sigurd D Eng
K H Spring M Sc Ph D C Eng F I EE F I Mech E
E J Whitmore Ph D F Inst P F I EE F B IM C Eng
G Winstel Dipl Phys Dr rer nat

Executive Editor K F G Paulus Ph D M Inst P

Staff Editor A P Ashby B Sc MAIE



Contents of Volume 15 1984

| nuary | 4 12 18 23 30 37 | The adoption of robots in industry: J Fleck The role of robots and telechirs in the equilibrium economy: M W Thring Power generation using fuel cells: D S Cameron and F J Ryan Beam annealing of semiconductor materials: B J Sealy Sinal magnetite and direction finding: R R Baker Developments in high-vacuum pumps: G F Weston Editorial: Trends and trendiness 3 Book reviews 45 Conference reports 48 Talking point 53 Trends in electronics 56 |
|-------|---|--|
| arch | 61 67 73 80 86 92 | Maglev – a British first at Birmingham: M G Pollard Semiconductor injection lasers: G A Acket and H Koelmans The physics of welding: J F Lancaster Science and technology as partners in technological innovation: E Braun Flat cathode ray tubes: A W Woodhead Physics in nuclear safeguards: B W Hooton Editorial: The role of the Industry Committee 59 Conference reports 99 Book reviews 106 Talking point 108 Trends in polymers 112 |
| ay | 117 120 129 136 143 150 157 | Letter to the Editor: Physics in nuclear safeguards: R Hesketh The physics of optical fibres: K W Plessner and R J Slaughter Optical fibre sensors for inspection monitoring: K F Hale The automatic control of urban road traffic: H T Tillotson Modern developments in turbulence studies: I P Castro Technological applications of ferrofluids: J Popplewell The National Physical Laboratory – a history: E Pyatt Editorial: Not pure but applicable 115 Conference reports 164 Talking point 168 Trends in flat panel display technology 170 |
| ly | 177 184 191 197 205 211 | Rubber bearings for the protection of buildings from earthquakes: L Mullins The bases of electrical metrology: C H Dix Contemporary evolution in cryptographic techniques: M Davio and J-J Quisquater The technology and economics of coal fired ships: J Sharpe Vehicle ride – stages in comprehension: A Best Developments in telephone switching systems: D M Leakey Editorial: Materials in engineering 175 Conference reports 218 Book reviews 222 Talking point 225 Trends in solar cells 228 |

| September | 232 239 244 252 262 | Applications of photochromic polymer films: A E J Wilson Properties and applications of piezoelectric polymers: P Pantelis Flow in pipes Part 1: Flow of homogeneous fluids: D C-H Cheng and N Heywood Ceramics in modern engineering: R Morrell Social alarm systems – aids for the elderly and handicapped: S N Pocock |
|-----------|---------------------------------|--|
| | 202 | Editorial: Molecular electronics 231 Conference reports 269 Book reviews 274 Talking point 278 |
| November | 284 291 301 | Spacecraft propulsion systems: M Williamson Flow in pipes Part 2: Multiphase flow: N I Heywood and D C-H Cheng Silicon microetching technology: V G I Deshmukh, T I Cox and J D Benjamin |
| | 308 315 | Ultrasonic viewing in fast reactors: L M Barrett, J A McKnight and J R Fothergill The thermal resistance of a cavity filled wall: A D Stuckes |
| | 321 | The physics of lubricant additives: R C Watkins Editorial: Hightech, lowtech and Phys Tech 283 Conference reports 329 Book reviews 331 Telling point 333 Trends in science and technology policy 334 |